

The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Jessica Castro Prieto
Project title	Assessment of the conservation status of Montevideo red belly toads (<i>Melanophryniscus montevidensis</i>) in Uruguay
RSG reference	10427-2
Reporting period	Final Report
Amount of grant	£6000
Your email address	chechiasp@gmail.com
Date of this report	January 17, 2013

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To conduct population surveys in three localities with different levels of urban development and human population density.			X	The locality in Montevideo was only visited once due to logistic limitations to arrive to this site.
To provide complementary information about optimal habitat requirement at different spatial scales.			X	We measured local environmental variables that may be affecting <i>M. montevidensis</i> occurrence including vegetation species, water pH, turbidity, Dissolved Oxygen (DO) and NO ₃ . High level of water turbidity (21 NTU) was measured in the LDWR in comparison with 2 NTU measured in temporal ponds in the LRPA. In addition, we found low levels of DO in the LDWR= 4 mg/l versus 10 mg/l in the LRPA. Both aquatic systems had similar pH values of ~ 7.
To measure the urban development and human population growth in the coastal zone		X		We gathered and analysed human population trend for Montevideo, Maldonado and Rocha. However, land use change in the coastal zone has not been calculated yet as one of the satellite images used for this analysis was recently acquired.
To collaborate and share information useful for the management plan and protection of this species in the Laguna de Rocha Protected Area (LRPA).			X	We have provided GPS locations and environmental data were this toad is more abundant to central government agencies. In addition, we included some recommendations for the protection of this species and its fragile habitat to the on-progress management plan for the LRPA. In addition, we will assist in the construction of signs to educate visitors about the importance of protecting this species and habitat.
To assess and identify main threat/ affecting this species within its distribution		X		Although we need to collect more data and conduct statistical analyses to support this finding, we can conclude that urban development in the coastal zone represents the main threat for <i>M.</i>

range.				<p><i>montevidensis</i> populations. Rising temperatures might be affecting this species too, but in this case we discarded this hypothesis as healthy populations are found at less than 200 km along the coastline. Laboratories analyses to detect chytrid fungus (<i>Batrachochytrium dendrobatidis</i>) will be performed in the laboratory of Dr. Patricia Burrowes in the University of Puerto Rico.</p>
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

During the development of the project we faced some difficulties to deal with our time schedule and to incorporate the same amount of effort in different study areas. Since the main goal of this project was to describe the most optimal habitat for this species as well as to estimate the size of a "healthy population" in this optimal habitats, we put less effort in describing the study sites in the Departments of Montevideo and Canelones where *M. montevidensis* is considered extinct (Maneyro & Langone 2001). To understand environmental differences that may be affecting the species occurrence we collected environmental data in Maldonado, specifically in the Laguna del Diario Wildlife Reserve (LDWR) where *M. montevidensis* used to be abundant but no records have been reported since 2009.

3. Briefly describe the three most important outcomes of your project.

1. We found that the human population in the department of Maldonado has the highest increment (~ 27%) for all the country during the last fifteen years (1996-2011) (see attached chart about population growth rate in each Department in Uruguay). Coupled with this result, we were not able to detect any individual of *M. montevidensis* in this department during a total of 5 hours of surveys in different sites where this species used to be abundant. This result support previous surveys conducted by researchers of the Facultad de Ciencias in the Universidad de la Republica (Maneyro pers. comm.). So, we suggest a dramatic decline of *M. montevidensis* populations in Maldonado and support its endangered conservation status in Uruguay.
2. This project provides important outcomes for the long-term study and conservation of *M. montevidensis* throughout its distribution range. For example, this is the first project in Uruguay that uses a capture-mark-recapture method to study *M. montevidensis* populations. We observed that our marking technique using an organic, non-toxic and soluble white body paint to mark individuals in their rare feat was a very successful short-term lasting and minimal invasive technique. Through this marking method and the Petersen-Lincoln equation we were able to estimate a population size of about 600 individuals in an optimal habitat, in this case in the LRPA.
3. Another important contribution of our study was the identification of key elements that may have a critical role for the presence of this species in the wild. For example, we supported

previous knowledge about habitat characteristics that are necessary for this species including the association of different ecosystem types (e.g., temporal wetlands, sand dunes, grasslands), semi-aquatic vegetation (e.g., *Juncus acutus*, *Scirpus californicus*) and vegetation associated to sand dunes (e.g., *Androtrichum trigynum*, *Eryngium pandanifolium*, *Hydrocotyle bonariensis*, *Panicum racemosus*) and other elements such as ants nests. In addition, we provide recommendations to design more effective field surveys such as the best time in the year (warm to hot weather and preferably after heavy rains) and best time in the day to conduct surveys (early in the morning from 6:30 am or late in the afternoon during sunset in summer). From our observations we concluded that even though this amphibian is not known to be hibernating during winter, we suggest some activity reduction of this species during winter or cool days as we only counted five individuals during a 3-hour survey in the LRPA on July 2012 (mean temperature= ~ 11 °C).

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Although benefits to local communities were not directly included within the main objectives of this project, we understand that community involvement is critical for the protection of this species. Through this one-year project we were able to become familiarised with each of the study areas as well as to identify the major human-environmental conflicts affecting them. We found that each surveyed site has its own conflict that may be address with different stakeholders including: cattle ranchers, aquatic vegetation harvesters, tourists, residents, municipalities and national environmental agencies (DINAMA). We believe that this project represents a starting point to involve the local community, particularly land owners in the LRPA as well as and local residents, and harvesters in the LDWR. For example, some possible benefits that have been used with much success in other countries include tax reduction or exonerations as well as certifications of eco-friendly farming activities. In addition, private owners and local residents could be involved in ecotourism or other activities from which they could get revenues. Economic benefits could be very important for a small group of local fishermen that inhabits the lagoons borders within the LRPA.

5. Are there any plans to continue this work?

Yes, there are several plans. First, we have to complete the objectives of this first project including the landscape analyses, analyses of samples that we have already collected for chytrid fungus detection and multivariate analyses to support our findings. After this first year of monitoring populations of *M. montevidensis* in Uruguay and in observing the fast rate of habitat loss and fragmentation in Maldonado, we concluded that there is an urgent need to update the international conservation status of this species from vulnerable to endangered. Therefore, we would be working with authorities to reclassify the species.

Results from of this project reveals the current status of *M. montevidensis* in Uruguay and therefore provides the opportunity to think in new strategies and conservation actions in those sites were populations of *M. montevidensis* are declining, but also inside protected areas where there are still some healthy ecosystems and populations. Some specific objectives for the near future include the designation and creation of new protected areas in Maldonado. This recommendation has already been suggested by a recent study that identified hotspots for the conservation of *M. montevidensis* within its distribution range (Bernardo-Silva *et al.* 2012). A continuation of this project will include monitoring population trends and habitat characteristics, but also it would include interviews to

local residents which may provide valuable information for the protection of this species. We believe that increasing public awareness about this issue and encouraging their participation in conservation actions, particularly in those sites with high human pressure, will be critical during this second phase of the project. In addition, this second phase will be focused in communicating results to governmental agencies (Dirección Nacional de Fauna-MGAP, División de Áreas Protegidas-MVOTMA), and the Municipality of Maldonado, as well as to the general public in schools and the local community.

For the continuation of this project we have been awarded with \$5,000 from the Scott Neotropical Fund-Cleveland Metroparks Zoo until July 2013.

6. How do you plan to share the results of your work with others?

Some results have already been presented in a public school in Montevideo. In addition, we have created a web page in Facebook (Proyecto Sapito de Darwin) to share information about the species across the Uruguayan coastline. This page is used to open forums, increase public awareness and discuss about environmental problems in the country. The group was created on March 2012 and up to date there are 134 active members posting photographs, papers, discussing and sharing data with us. A Spanish version of this report will be presented to governmental agencies to support the legal protection of this species and its habitat in and outside protected areas.

We are planning to publish a note in the national newspaper (*El País*) about the conservation status of this toad in order to alert about a potential local extinction of this species in Maldonado unless conservation actions are not taken as soon as possible. A scientific publication in a peer-reviewed journal will be also used to communicate our results.

7. Timescale: Over what period was the RSG used? How does this compare to the anticipated or actual length of the project?

Although I received the grant on September 2011, it wasn't until December 2012 that I used it for the first time for field surveys and data collection. This timeline (December 2012-December 2013) was attached in the original proposal. Due to unexpected logistical problems to conduct the last field survey on November 2012, it was postpone to January 7th to January 12th 2013. To summarise, the original time line was 12 months, while the actual length of the project was 13 months.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Car rental for local travel to the study area and within study sites and toll gates	1300	1305	-5	
Gasoline	650	690	-40	
Lodging	870	850	20	
Per-diem	380	340	40	
Equipment and materials	2800	2770	30	
TOTAL (1.00 USD= 0.623692 GBP)	6000	5955	5	

9. Looking ahead, what do you feel are the important next steps?

As I mentioned before, I think the most important step is to update the current conservation status in the international and local classification lists. Secondly, we would continue to search for additional sources of funds and governmental support to continue monitoring this species and its habitat. Finally, I think that it is critical to increase Uruguayan's awareness about the negative effects of this fast urban expansion in our coastal ecosystems and biodiversity.

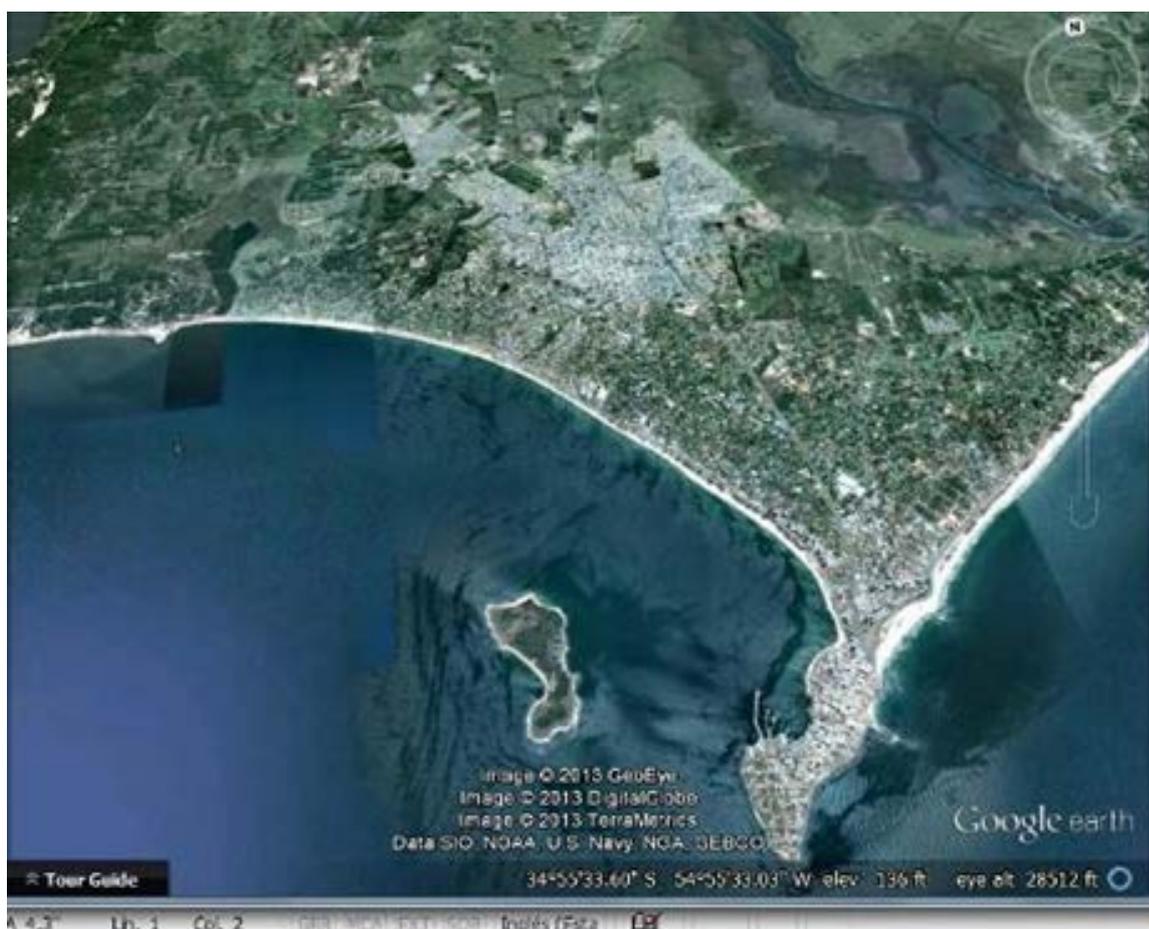
10. Did you use the RSGF logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

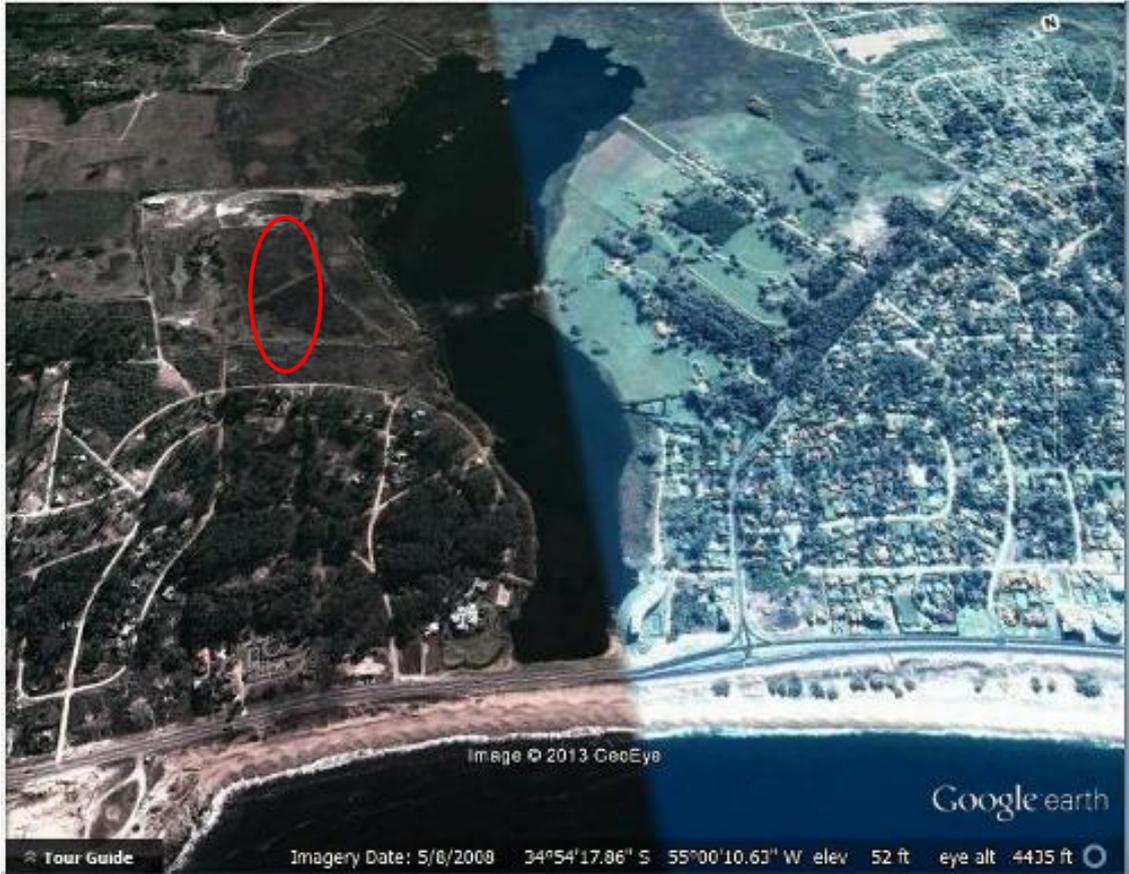
Yes, I used the logo during the lecture that I gave in the public school in Uruguay and in one additional seminar to students of Natural Sciences in the University of Puerto Rico. In addition, the logo will be used in future publications and in some of the signs that we are currently designing to be deployed within the Laguna de Rocha Protected Area.

11. Any other comments?

We found that the LRPA so far has been effective to protect *M. montevidensis* populations. However, optimal habitats for this species are still vulnerable to human activities including run-over natural habitats by vehicles, intentional fires, and sand dunes degradation (photographs attached). Additional threats were observed in the LDWR including landfill, hydrology modification, water pollution and harvest of *Panicum priorities* for roof construction. The establishment of regulations to protect natural habitats and its species as well as law enforcement inside and outside protected areas are still a major challenge in Uruguay.

LAGUNA DEL DIARIO WILDLIFE RESERVE IN THE DEPARTMENT OF MALDONADO





LAGUNA DE ROCHA PROTECTED AREA IN THE DEPARTMENT OF ROCHA





Tour Guide

Imagery Date: 6/28/2010 24°09'46.26" S 54°15'14.44" W elev 14 ft eye alt 570 ft